REMARKS

In response to the Examiner's objection to the abstract, Applicants have amended the abstract so that it does not exceed the 150 word limit. No new matter has been added.

In order to expedite the prosecution of the present application, the subjects matter of Claims 42-47 have been respectively incorporated into Claims 36-41. That is, the currently presented claims now recite that the respective second parts of the respective interconnectors have a density less than the respective first parts. Since Applicants are merely incorporating language from a dependent claim into an independent claim and canceling the dependent claims, entry of the amendment to the claims is proper under 37 CFR 1.116(b). Favorable consideration is respectfully solicited.

Claims 36-47, 13, 19-27 and 29-33 have been rejected under 35 USC 103(a) as being unpatentable over Sato in view of Tsukuda, Bates and Barker. Claims 7, 8, 17 and 18 have been rejected under 35 USC 103(a) as being unpatentable over Sato in view of Tsukuda, Bates and Barker and further in view of Akiyama. Claims 9-12, 14-16, 28, 34 and 35 have been rejected under 35 USC 103(a) as being unpatentable over Sato in view of Tsukuda, Bates, Barker and further in view of Xue. Applicants respectfully traverse these grounds of rejection and urge reconsideration in light of the following comments.

In its broadest embodiment, the presently claimed invention is directed to a method of manufacturing a solid oxide fuel cell module made up of a plurality of cells provided adjacent to one another and electrically connected in series by an interconnector provided therebetween. Each cell is made up of a fuel electrode, an electrolyte and an air electrode sequentially formed on a surface of a substrate having an internal fuel flowpath provided therein. At least a surface of the substrate in contact with the cells and interconnectors are electrically insulating. The method comprises the steps of providing respective fuel electrodes

and respective electrolytes on the surface of the substrate, co-sintering the respective fuel electrodes and respective electrolytes, providing a respective first part of the respective interconnectors having a density that is not less than 90% of the theoretical density of the interconnector material or that will have a density of not less than 90% of the theoretical density of the interconnector material after sintering in contact with the respective fuel electrodes and the respective electrolytes, forming respective air electrodes on the respective electrolytes and electrically connecting the respective electrodes with the respective first parts of the respective interconnectors via respective second parts of the interconnectors which have a density less than respective first parts.

As stated previously, the present invention is based on the discovery that through using a dense material in the first part of an interconnector which comes into contact with a fuel electrode and electrolyte of a fuel cell, the gas-sealing performance is enhanced by preventing gas from leaking between the interconnector and the respective electrolytes and a secure electrical contact is achieved. The present invention also requires that a second part of the interconnector have a density less than that of the first part to enable the advantageous effect that the fabrication of the interconnectors can be implemented concurrently with the formation of the air electrodes or at a temperature lower than the sintering temperature of the air electrodes. It is respectfully submitted that the currently presented claims clearly are patentably distinguishable over the prior art cited by the Examiner.

As argued previously, the Sato et al reference is directed to a solid oxide fuel cell which is made up of a hollow dense substrate having a plurality of mounting holes formed on the surface thereof, cell sections provided in the mounting holes and interconnections formed between adjacent cell sections. The interconnections are disclosed as being a

material having an electrical conductivity and that is stable in both oxidizing and reducing atmospheres. This reference has no disclosure with respect to the density of the interconnectors let alone require that one portion of the interconnector have a density different from another portion of the interconnector. The present invention also requires that co-sintering be done with at least two of the insulator substrates, fuel electrodes, electrolytes, interconnectors and air electrodes. In contrast thereto, the Sato reference requires that a finished fuel cell be placed in cell attachment holes provided in a dense substrate and then the interconnectors are formed. There are numerous differences between the presently claimed invention and Sato and the secondary references cited by the Examiner must provide the motivation to one of ordinary skill in the art to modify the Sato reference in a manner that would yield the presently claimed invention. It is respectfully submitted that the secondary references contain no such disclosures.

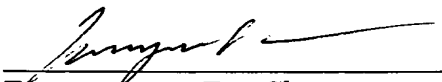
Tsukuda et al is directed to a fuel cell comprising a fuel electrode and an air electrode disposed on side surfaces of an electrolytic film. Interconnectors 15 are provided on the fuel cell and this reference discloses that the fuel electrode 12, an electrolyte 13 and an interconnector 15 could be co-sintered. However, there is no disclosure in this reference regarding a first portion of the interconnector having a different density than a second portion of the interconnector. Therefore, this reference does not cure the primary defect contained in the Sato reference.

Akiyama, Xue, Bates and Barker have been cited by the Examiner as disclosing various other aspects of the present invention. However, since none of these references speak to a fuel cell having an interconnector having a first density at a first part in contact with respective fuel electrodes and respective electrolytes and a second part of an interconnector having a density less than that of the first part, these

references do not cure the defects contained in the previously discussed references.

The Examiner is respectfully requested to reconsider the present application and to pass it to issue.

Respectfully submitted,



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